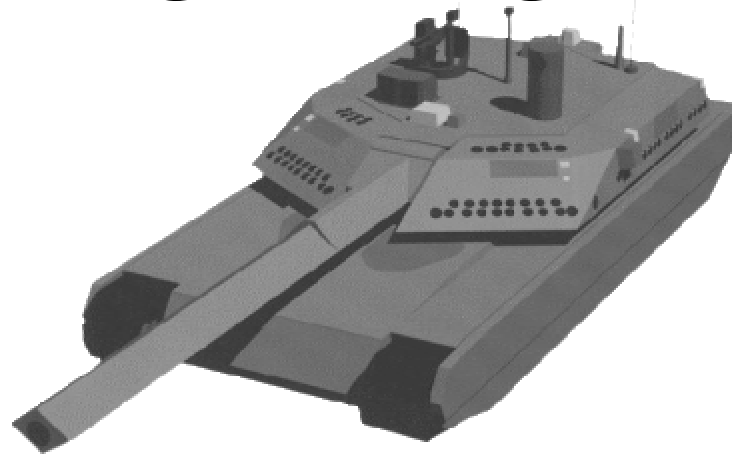




# **TACOM**

Lethality, Survivability, Mobility and  
Sustainment for America's Army

## **Tank-Automotive Research, Development, and Engineering Center**



## **Technologies for the Objective Force**

**Mr. Dennis Wend**

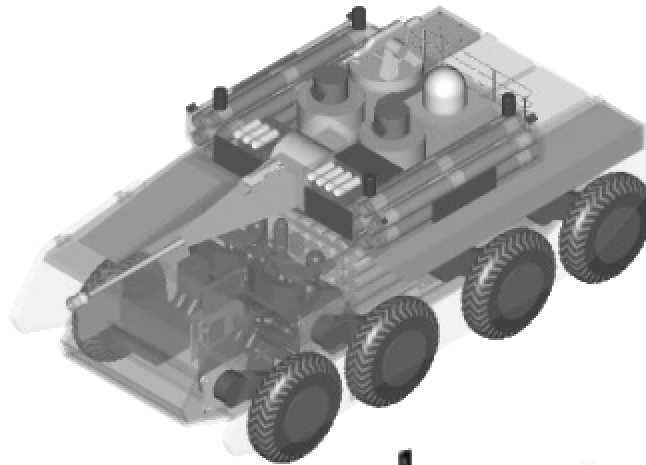
**Executive Director for the National Automotive Center**



**Updated: May 2001**

# TARDEC's Vision

## *Superior Technology for a Superior Army*



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*Committed to Excellence*

# TARDEC's Six Principal Product Lines



*Combat and Tactical Vehicles*



*Military Bridging*



*Logistics Equipment*



*Fuels and Lubricants*



*Countermines Equipment*



*Water Purification Equipment*

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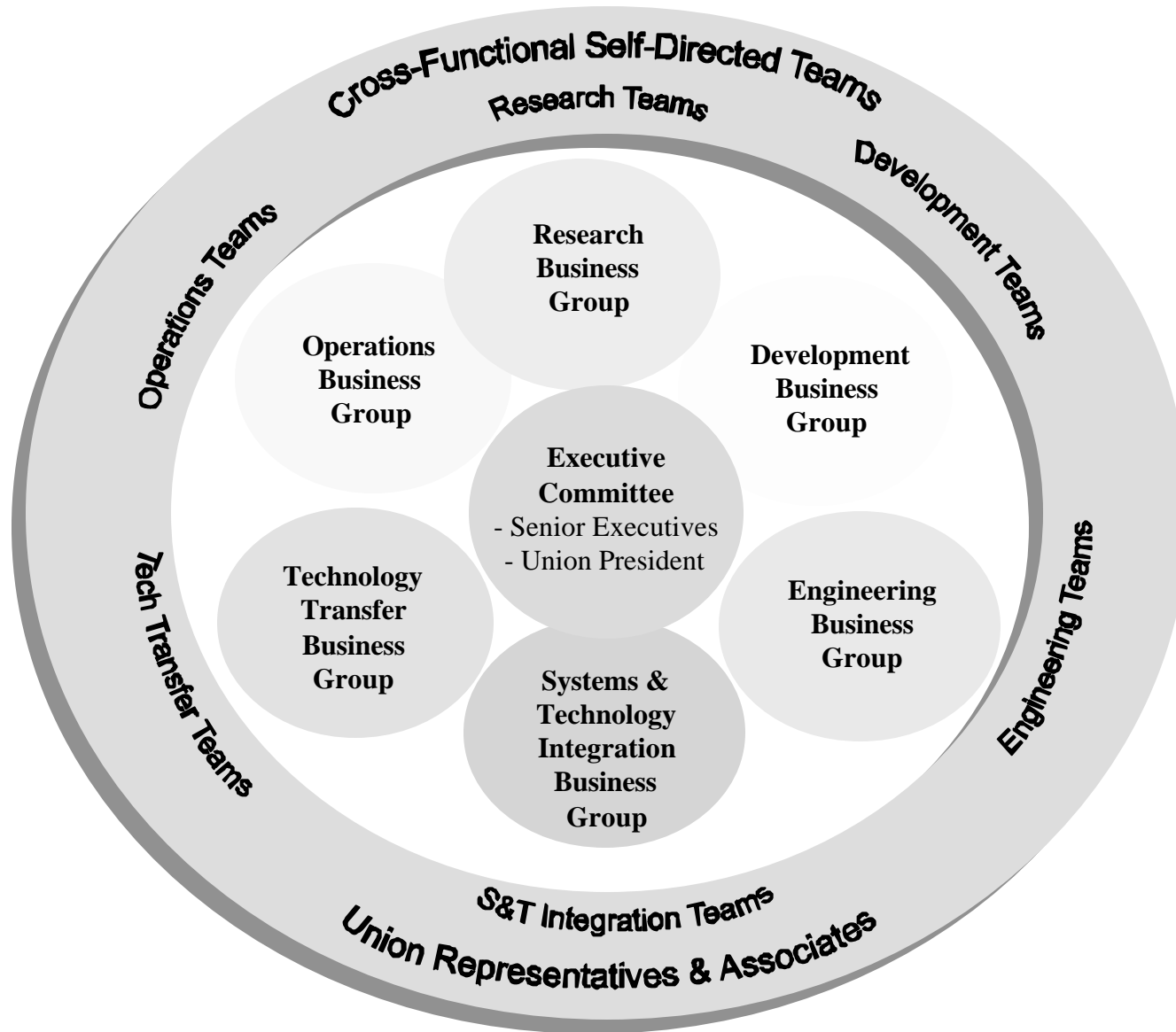
*Committed to Excellence*

# TARDEC's Principal Laboratories

- 
- *Simulation Lab*
  - *Concepts Lab*
  - *Perception Lab*
  - *Fuels & Lubricants Lab*
  - *Water Purification Lab*
  - *Propulsion Lab*
  - *Vetronics Integration Simulation Lab*
  - *Laser Lab*
  - *Composite Application Lab*
  - *Robotics Lab*
  - *Virtual Prototyping Lab*
  - *Track & Suspension Lab*
  - *Rapid Prototyping Lab*
  - *High Performance Computing*
  - *Terrain Sensing Lab*
  - *50+ Special Facilities*

Investing in Intelligent Systems

# TARDEC's Organization



*Committed to Excellence*

# Research Business Group

- *Vehicle Electronics*
- Survivability Optimization
- Armor
- *Active Protection*
- *Signature Management*
- *Robotics*
- *Propulsion*
- *Track & Suspension*
- *Crew Station Design*
- Life Cycle Software Management
- *Vehicle Power Management*
- Laser Eye Protection



*Soldier operating a crew station simulator.*

# National Automotive Center



**Dual Use/Dual Needs Focus**

**Dual Use Science & Technology  
(DUS&T) Program**

**Advanced Automotive  
Developments**

**Military**

**Industry/Academia**



**FAR Contract**

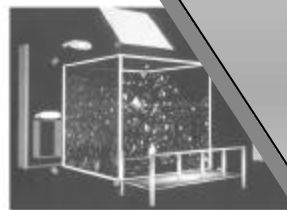
**Cooperative Agreement  
(CA)**

**Other Transaction (OT)**

**Cooperative Research and  
Development Agreement  
(CRADA)**

**Small Business Innovation  
Research (SBIR)**

**Automotive Research  
Center (ARC)**



**Leverage Shared Technology/  
Technology Transfer**

**Advanced Collaborative  
Environments**

**High Performance  
Computing**

**Analytical Simulation**

**Physical Simulation**

**Virtual Prototyping  
Tools**

*Committed to Excellence*

# TARDEC Robotics

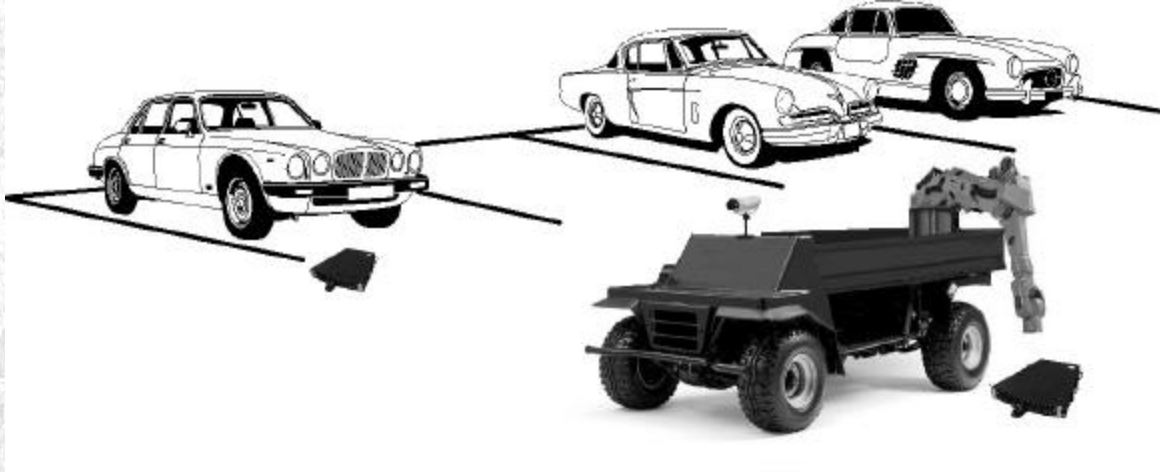
TARDEC Robotics  
Laboratory

Crew Automation and  
Robotics Team

6.1

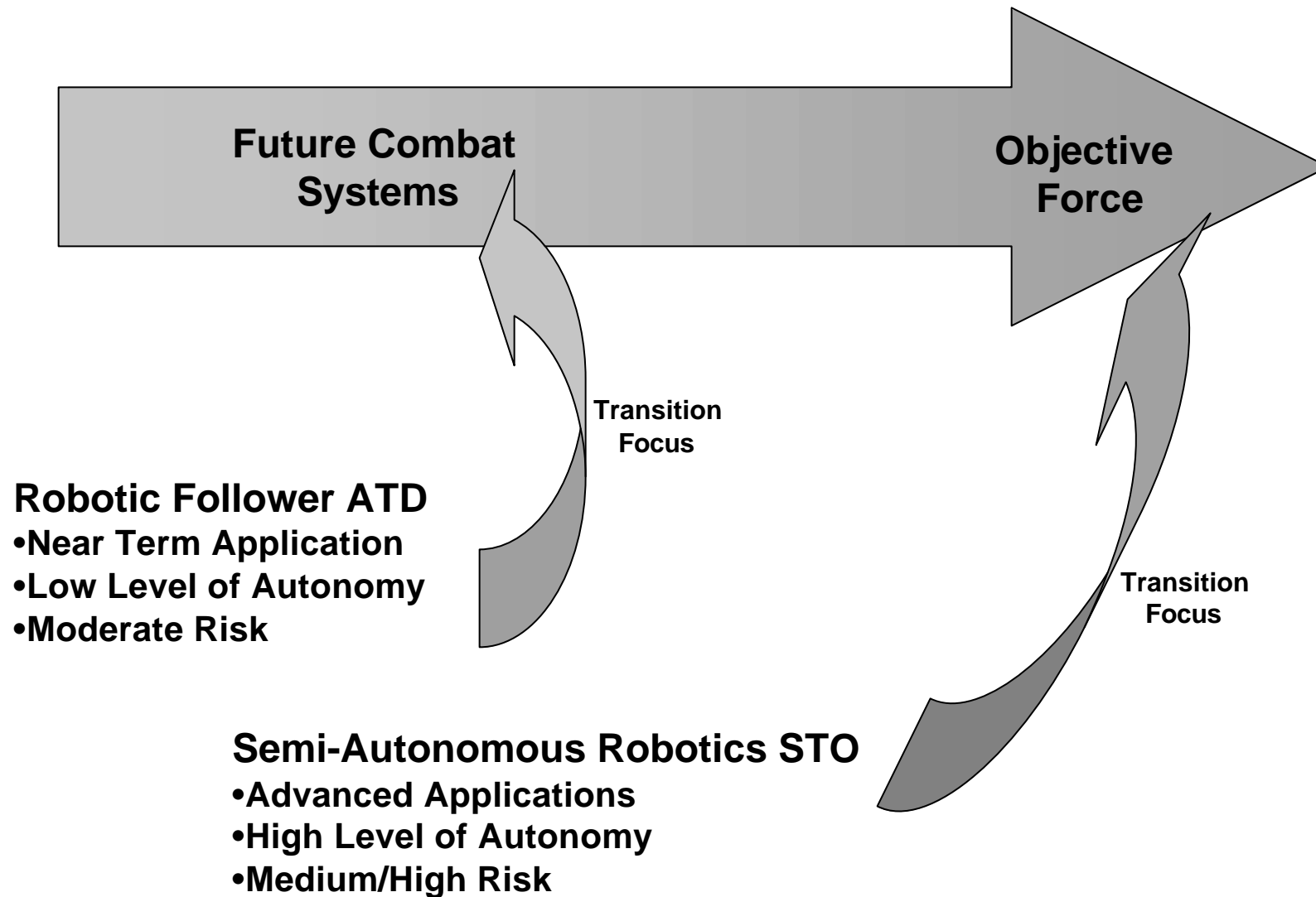
6.2

6.3





# Army Robotics Transition Strategy



# AUTOMOTIVE RESEARCH CENTER

*A Partnership of Eight Research*

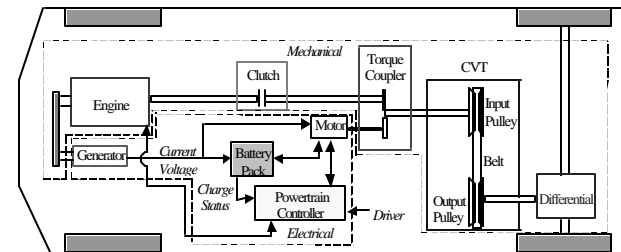
*Universities*

## 1<sup>st</sup> Thrust Area: Intelligent Vehicles and Robotics

- Enhance mission efficiencies
- Enhance fleet logistics
- Enhance driver/soldier efficiencies
- Reduce fuel consumption
- Increase mission safety margins
- Reduce overall emissions
- Reduce mission crew size

- Dynamic Route Guidance
- Driver Condition Systems
- Vehicle Dynamics/Stability

### Design of Control System for Continuously Variable Transmission (CVT) System



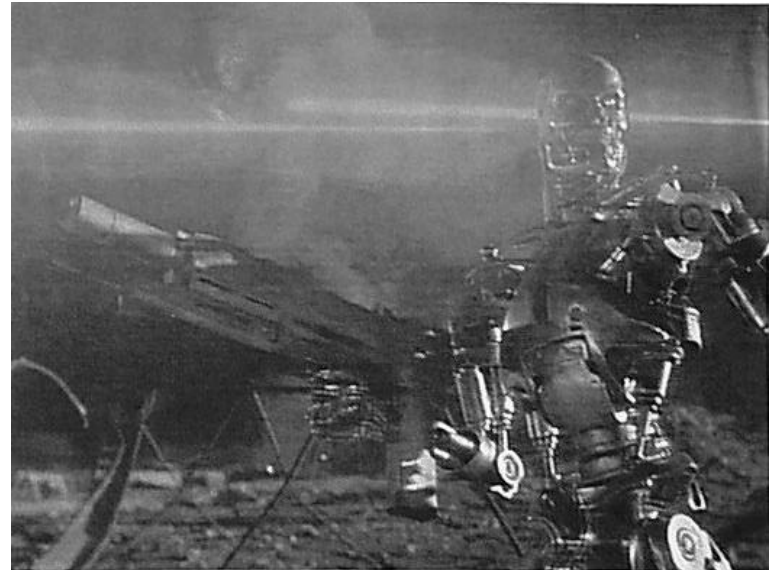
Parallel Hybrid Vehicle Featuring a CVT

- Fleet Management
- Vehicle Diagnostics
- Vehicle Optimal Design

# **Conclusions: Investing in Intelligent Systems**

## **TARDEC Intelligent Systems Groups:**

- 21<sup>st</sup> Century Truck – Vehicle Intelligence Team
- TARDEC Robotics Lab
- Crew Automation and Robotics Team
- Vehicle Electronics (Vetronics)
- Telematics for Prognostics and Diagnostics
- Perception Lab
- Automotive Research Center



Pushing the envelope  
with intelligent systems

# SmartTruck Current Capabilities

Bullet  
Proof  
Glass

On-Board  
Diagnostics

Video  
Surveillance

Wireless  
Communication

Non-Lethal  
Weaponry

Night  
Vision

B.F. Goodrich  
Run Flat Tires

Touch  
Screen  
Display

Bomb  
Detection

Global  
Positioning  
System

